

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. 89-16

SITE CLEANUP REQUIREMENTS FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION AND SCHLUMBERGER TECHNOLOGY CORPORATION
SAN JOSE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Regional Board), finds that:

1. Site Location. Fairchild Semiconductor Corporation and Schlumberger Technology Corporation, hereinafter called the dischargers, owned and operated a semiconductor manufacturing facility at 101 Bernal Road in the City of San Jose. The dischargers operated the facility from April 1977 until the facility was closed in October 1983. The facility has been inactive since 1983.
2. Property Transfer. In 1987, all issued and outstanding shares of Fairchild stock were sold by Schlumberger Technology Corporation ("Schlumberger") to National Semiconductor Corporation. Following the sale, Schlumberger retained the site of Fairchild's former San Jose Facility. However, Fairchild retained all environmental liabilities associated with its past activities at the site. Schlumberger is currently managing the cleanup on behalf of Fairchild. Schlumberger has entered into a contract to sell the 22 acre site to the Koll Company. Koll plans to develop the property as a neighborhood shopping center.
3. Regional Board Orders. The Regional Board adopted Waste Discharge Requirements in Order No. 86-62 on August 20, 1986 for the dischargers' interim site cleanup. Order No. 87-16, adopted March 18, 1987, rescinded Order No. 86-62 and prescribed site cleanup requirements for the dischargers' interim cleanup. Order No. 87-16 was amended on March 16, 1988 by Regional Board Order No. 88-46. Orders 88-46 and 87-16 are rescinded by this Order. This Order sets tasks and submittal dates for final site remediation to be consistent with the Health and Safety Code and the National Contingency Plan.
4. Lead Agency Designation. The dischargers' San Jose site is proposed for inclusion on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The site is also included on the California Expenditure Plan for the Hazardous Waste Cleanup Bond Act of 1984. Pursuant to the South Bay Multi-Site Cooperative Agreement and the South Bay Ground Water Contamination Enforcement Agreement, entered into on May 2, 1985 (as subsequently amended) by the Regional Board, the Environmental Protection Agency (EPA), and the Department of Health Services (DHS), the Regional Board has been acting as the lead agency overseeing cleanup of the site. The Regional Board will continue to regulate the dischargers' remediation and enforce

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under CERCLA as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA).

5. Potential Responsible Parties. Pursuant to Health and Safety Code Sections 25356.1(d) and 25356.1(c), the dischargers are the only identified or known responsible parties associated with the release of pollutants to the sub-surface.
6. Pollutants Detected. In November 1981, the dischargers discovered that an underground organic solvent tank had failed, releasing a mixture of solvents including 1,1,1-trichloroethane (TCA), 1,1-dichloroethene (DCE), tetrachloroethene (PCE), isopropyl alcohol (IPA), xylenes, acetone, and 1,1,2-trichloro-1,2,2-trifluoroethane (Freon-113) to the subsurface. All of these chemicals have been detected in soils and groundwater within the dischargers' property boundaries. TCA, DCE, and Freon-113 have also been detected off-site. TCA is the pollutant that has been detected most frequently and in the highest concentrations.
7. Hydrogeology. Three aquifers, designated the A, B, and C aquifers, have been polluted by the release. The A aquifer varies from 10 to 40 feet thick and is first encountered at depths of 10 to 20 feet below the ground surface. The A aquifer is not continuous off-site (outside Fairchild's property boundaries) and is currently generally dewatered. The B aquifer is generally located between depths of 60 and 120 feet below ground surface. The C aquifer is generally found between 150 and 190 feet below ground surface. Only trace levels of pollutants have ever been detected below the B aquifer on-site or below the C aquifer off-site.
8. Interim Actions. The dischargers have been extracting groundwater from the Santa Teresa Basin as part of its interim cleanup program since January 1982. Other interim actions taken by the dischargers include removing the defective tank, excavating 3,389 cubic yards of soil, installing a slurry wall around the perimeter of the property, sealing potential conduits, and conducting pilot studies for on-site aquifer flushing and in-situ soil vapor extraction.

The dischargers' interim actions have brought the plume under hydraulic control, significantly reduced the size of the plume, and significantly reduced solvent concentrations within the plume. The length of the plume has been reduced from a maximum of 4,900 feet in October 1982 to approximately 2400 feet. The maximum concentration of TCA detected off-site has been reduced to 430 ppb (9-12-88 data) from 5600 ppb in November 1982. TCA concentrations in the C aquifer are below 5 ppb.

9. NPDES Discharge. The extracted groundwater has been discharged under an NPDES Permit, Regional Board Order No. 82-61, with and without treatment to storm drains leading to Canoas Creek. Canoas Creek is tributary to the Guadalupe River which flows into south San Francisco Bay. The Regional Board will reissue a NPDES permit as part of this cleanup plan. Under the new permit, volatile organic chemical concentrations of up to 100 ppb each chemical may enter Canoas Creek during the next two years. At the end of two years, discharge of most volatile organic chemicals to Canoas Creek must not exceed 5 ppb for each chemical.

Recharge from Canoas Creek may occur to a slight degree. The Guadalupe River provides significant recharge to shallow groundwater aquifers along

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its length. No additional investigation of Canoas Creek recharge is planned due to the very low concentrations of chemicals currently being discharged into the creek by the dischargers and the insignificance of recharge in Canoas Creek.

10. The Slurry Wall. In 1986, the dischargers installed a 3-foot thick slurry wall around the perimeter of their property. The slurry wall is keyed into the BC aquitard and encloses approximately 22 acres. If a head differential across the slurry wall of less than 24 feet is maintained, no loss of fine-grained soils from the slurry wall is expected to occur. The dischargers have determined that this head differential provides a factor of safety of 4 with respect to decreased effectiveness of the slurry wall from loss of fines. The current head differential across the slurry wall is 19 feet on the up-gradient side of the slurry wall and less than 2 feet on the down-gradient side.
11. Groundwater Overdraft. As a result of aquifer cleanup, low rainfall, reduced active recharge efficiency, and increased groundwater extraction for water supply purposes, groundwater elevations have declined throughout the Santa Teresa Basin since 1981. In March 1988, the Regional Board adopted Order No. 88-46 requiring the dischargers to develop a water conservation program for the C aquifer. As a result of the water conservation program and the effectiveness of interim cleanup, the dischargers terminated groundwater extraction from the C aquifer on September 6, 1988.
12. Draft Remedial Action Plan. The dischargers have submitted a remedial action plan as required by Regional Board Order 87-16. The technical information contained in the remedial action plan (RAP) is consistent with the Health and Safety Code requirements for a final remedial action plan and the National Contingency Plan (NCP) requirements for a remedial investigation and feasibility study (RI/FS). The RAP contains an evaluation of interim cleanup actions, an evaluation of groundwater conservation measures, an evaluation of final cleanup alternatives, proposed cleanup levels, a recommended final cleanup plan, and a public health evaluation.

DHS and EPA have reviewed and commented on the draft RAP submitted by the dischargers. The initial draft RAP has been available for public review since September 1, 1987.

Regional Board staff have determined that the technical information contained in the revised RAP submitted October 7, 1988, is acceptable for developing a final cleanup plan for the site. In making this determination, staff did not accept the portions of the RAP addressing: (1) Applicable or Relevant and Appropriate Requirements (ARARs), and (2) the NPDES permit. These areas are addressed in the Addendum to the RAP dated December 16, 1988, prepared by agency staff. The RAP submitted October 7, 1988 as modified by the Addendum, the staff report, this Order, and Order No. 89-15 (NPDES Permit No. CA 0028185) satisfy the requirements of the Health and Safety Code for a final remedial action plan and the NCP requirements for a remedial investigation and feasibility study.

13. Cleanup Alternatives. In the RAP, the dischargers evaluated cleanup levels and alternatives separately for the on-site and off-site areas. The dischargers evaluated seven alternatives for off-site cleanup and six

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alternatives for on-site cleanup. A complete description of these alternatives is contained in the RAP dated October 7, 1988. The alternatives were evaluated based on ten criteria: (1) overall protection of human health and the environment; (2) compliance with all federal and state applicable or relevant and appropriate requirements (ARARs); (3) reduction of toxicity, mobility or volume; (4) short term effectiveness; (5) long term effectiveness; (6) implementability; (7) cost; (8) State and EPA acceptance; (9) groundwater conservation; and (10) community acceptance.

14. Hazard Indices. The dischargers evaluated off-site groundwater cleanup levels using Hazard Indices (HIs). The HI is a method for assessing the public health risk associated with exposure to multiple chemicals. A HI equal to 1 indicates that all chemicals of interest are present at or below their relevant drinking water criteria. Hazard Indices are usually calculated separately for carcinogenic and non-carcinogenic chemicals. For the Fairchild site, Hazard Indices were only calculated for non-carcinogenic chemicals because there are no known potential carcinogenic chemicals in off-site groundwaters and only one potential carcinogen, PCE, has been detected on-site. PCE is present in on-site groundwater at a concentration of up to 85 ppb, which is equivalent to a carcinogenic Hazard Index of 21.3. DHS and EPA have reviewed the dischargers' proposed use of Hazard Indices and found that the indices appear to be justified for drinking water based on available data. These values may increase or decrease based on possible future changes in DHS drinking water action levels or other safe drinking water standards for these chemicals.

15. Final Cleanup Plan. Based primarily on information contained in the RAP, this Order provides for a final cleanup plan that includes:

- a. Continued groundwater extraction from off-site aquifers until a cleanup level of $HI=0.25$ is achieved.
- b. Continued groundwater extraction from on-site aquifers until drinking water quality is achieved, if feasible. If these levels are determined to be infeasible, on-site groundwater extraction shall continue as long as significant quantities of chemicals are being removed through groundwater extraction.

Achieving drinking water quality on-site is an Applicable or Relevant and Appropriate Requirement (ARAR) for this site. If drinking water quality cannot be achieved, the dischargers must demonstrate to the satisfaction of the Regional Board that the conditions for waiving an ARAR are met (e.g., that meeting the ARAR is technically impracticable from an engineering perspective) and that the alternative proposed will be protective of human health and the environment. The Order will then need to be modified by the Regional Board to allow a less stringent on-site groundwater cleanup level.

- c. Cleanup of on-site soils containing greater than 1 ppm TCA using in-situ soil aeration. The cleanup goal for on-site soils is 1 ppm. A different soil cleanup level may be acceptable if: (1) the Executive Officer determines that higher levels of chemicals can remain in on-site soils without causing concentrations in on-site aquifers to increase when on-site pumping is terminated and the area within the slurry wall resaturates, or (2) the Executive Officer determines that it is infeasible to achieve the cleanup goal of 1

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ppm and that public health and the environment will be protected. Information obtained from chemical desorption tests conducted of on-site soils will be considered in determining if a different soil cleanup level should be established.

- d. Treatment by air stripping and reinjection of groundwater extracted on-site and from off-site well RW-25. If reinjection or reuse is attempted and determined to be infeasible by the Regional Board, the water will be treated using air stripping and discharged into storm drains leading to Canoas Creek.
 - e. Nozzle aeration of groundwater extracted from off-site wells except well RW-25 and then discharge into storm drains leading to Canoas Creek.
 - f. A goal of 100 percent for reusing off-site groundwater. Considering the short term nature (approximately 2 years) of the bulk of the dischargers' off-site extraction, the time required to construct necessary reuse facilities, and that most potential users need water only on an intermittent basis, the dischargers' ability to implement a program for reusing a significant portion of their extracted groundwater will be limited.
 - g. A laboratory and field study of biodegradation of on-site chemicals.
 - h. A re-evaluation of the feasibility and effectiveness of on-site groundwater flushing. This evaluation will be required in the five-year remedial program evaluation required under Provision 2.h of this Order if the cleanup efforts described above cannot reduce concentrations in on-site groundwater to safe drinking water levels.
 - i. A deed restriction. The dischargers shall be required to file a deed restriction prohibiting use of on-site groundwater for drinking water and limiting other subsurface activities in order to protect and maintain the integrity of the slurry wall. The deed restriction shall remain in place until safe drinking water levels are achieved on-site.
 - j. Additional monitoring wells. Additional monitoring wells will be required to define the boundaries of the plume in the area bordered by Bernal Road, Via del Oro, Great Oaks Boulevard, and Santa Teresa Boulevard. Piezometers may also be required to determine extraction well capture zones.
 - k. Long-term monitoring (for approximately 30 years) after cleanup levels are achieved.
16. Final Cleanup Levels. The cleanup level for off-site aquifers is $HI=0.25$ as clarified in Specification B.3 and in Table 1 of the groundwater self-monitoring plan attached to this Order. The cleanup goal for the on-site aquifers is the DHS drinking water action level or Maximum Contaminant Level (MCL), whichever is more stringent, for each of the following chemicals: TCA, DCE, Freon-113, and xylenes. The cleanup goal for PCE is 2 ppb based on the proposed State MCL. No action levels or MCLs have been established for acetone or IPA. The final cleanup goal for acetone, based on the oral reference dose in the Integrated Risk Management System

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(IRIS) is 3500 ppb. The final cleanup goal for IPA is 2,250 ppb. This value is based on the DHS Site Specific Remediation Criterion for IPA, as explained in Table 2 of the Groundwater Self-Monitoring Plan attached to this Order. These cleanup levels and goals are at or below drinking water health criteria, action levels, and standards and will assure preservation of beneficial uses by maximizing the quality of groundwater to the maximum extent feasible.

The soil remediation goal is 1 ppm each for TCA, DCE, PCE, Freon-113, and xylenes. A goal is set due to the technical uncertainties associated with remediation of soil by means other than excavation and disposal which is no longer feasible due to prohibitive cost and is not the preferred remediation method as it does not treat the soil or reduce the volume of chemicals. This goal will be re-evaluated based on the results of in-situ soil aeration and chemical desorption test results for the soil and evaluation of cleanup efforts.

17. Future Changes to Cleanup Levels. The dischargers are expected to achieve the cleanup goals of this final cleanup plan within 5 years. If new information indicates cleanup levels cannot be reasonably attained or can be reasonably surpassed, the Regional Board will decide if further final cleanup actions beyond those completed shall be implemented at this site, based to a significant degree on the information developed pursuant to this Order. If changes in health criteria, administrative requirements, site conditions, or remediation efficiency occur, the dischargers will submit an evaluation of the effects of these changes on cleanup levels specified in Specification B.3, B.4, and B.6 and on Tables 1 and 2 of the groundwater self-monitoring plan attached to this Order.

The Regional Board recognizes that the dischargers have already performed extensive investigative and remedial work on-site and off-site and that the dischargers are being ordered hereby to perform substantial additional remedial tasks. It is in the public interest to have the dischargers undertake such remedial actions promptly and without prolonged litigation or the expenditure of public funds. The Regional Board recognizes that an important element in encouraging the dischargers to invest substantial resources in undertaking such remedial actions is to provide the dischargers with reasonable assurances that the remedial actions called for in this Order will be the final remedial actions required to be undertaken by the dischargers. On the other hand, the Regional Board also recognizes its responsibility to protect water quality, public health, and the environment and that future developments could indicate that some additional remedial actions may be necessary. The Regional Board has considered and balanced these important considerations, and has determined that the remedial actions ordered herein represent the Regional Board's best, current judgment of the remedial actions to be required of the dischargers. The Regional Board will not require the dischargers to undertake additional remedial actions with respect to the matters previously described herein unless: (1) conditions on the site, previously unknown to the Regional Board, are discovered after the adoption of this Order, or (2) new information is received by the Regional Board, in whole or in part after the date of this Order, and these previously unknown conditions or this new information indicates that the remedial actions required in this Order may not be protective of public health and the environment. The Regional Board will also consider technical practicality, cost effectiveness, State Board Resolution No. 68-16 and the other factors

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evaluated by the Regional Board in issuing this Order in determining whether such additional remedial actions are appropriate and necessary.

18. Groundwater Conservation. On July 21, 1988, the State Board adopted Resolution No. 88-88 which required that Fairchild and IBM remediation plans must result in beneficial use of or recharge to the Santa Teresa Basin of a significant amount of extracted groundwater. If use or recharge of significant amounts is not proposed for the period after January 31, 1989, the dischargers must fully justify reasons for not using or recharging the groundwater. The justification must also demonstrate why continued pumping is necessary from the standpoints of public health, protection of potential and present beneficial uses, maintaining high quality water, and providing the maximum benefit to the people of the State.

The dischargers currently propose to treat the bulk of off-site groundwater by nozzles with no additional use prior to discharge to storm drains leading to Canoas Creek; however, the dischargers are evaluating the feasibility of reusing the groundwater resulting from the cleanup activities. If an opportunity for additional reuse occurs, the dischargers will evaluate that potential reuse based on the conditions set forth under the California Water Code Section 13550.

The Regional Board intends to strongly encourage, and require to the extent allowed by law, the maximum reuse of extracted groundwater feasible either by the dischargers or other public or private water users. This Order requires groundwater conservation and reuse measures to be consistent with State Board Order 88-88. These measures include reinjection or reuse of groundwater extracted from on-site wells and from off-site well RW-25, if feasible, and requiring the dischargers to submit a plan for reusing extracted groundwater, with a reuse goal of 100 percent. Due to factors beyond the dischargers' control, the dischargers may be unable to attain the 100% reuse goal established by this Order. The dischargers will not be found to be in violation of this Order if documented factors beyond the control of the dischargers prevent the dischargers from attaining 100% reuse, provided that the dischargers made a good faith effort to attain that goal.

19. Evaluation of Final Plan. In accordance with the Health and Safety Code Section 25356.1, Section 121 of CERCLA, the final remedial action plan (including the RAP submitted by the dischargers on October 7, 1988, the Addendum dated December 16, 1988, this Order, and Order No. 89-15 (NPDES Permit No. CA 0028185) is equivalent to a feasibility study; satisfies the requirements of the California Water Code Section 13304 and is protective of human health and the environment; attains Applicable or Relevant and Appropriate Requirements (ARARs); utilizes permanent solutions and alternative treatment technologies and resource recovery technologies to the maximum extent possible for short term effectiveness; is implementable; is cost effective; is acceptable based on State regulations, policies, and guidance; reduces toxicity, mobility, and volume of pollutants; and addresses public concerns.
20. State Board Resolution 68-16. On October 28, 1968, the State Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California". This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any

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change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. This is based on a Legislative finding, contained in Section 13000, California Water Code, which states in part that it is State policy that "waters of the State shall be regulated to attain the highest water quality which is reasonable." The original discharge of wastes to the groundwater at this site was in violation of this policy; therefore, the groundwater needs to be restored to its original high quality to the extent reasonable. Based on available information, as found in the dischargers' technical reports "Remedial Action Plan, Fairchild Semiconductor Corporation, San Jose Facility" dated September 1987 and revised May 1988 and October 1988, the change in water quality does not unreasonably affect beneficial uses and is consistent with the maximum public benefit as defined in State Board Resolution No. 68-16. This limited degradation would not exceed any established water quality policies; the remediation water quality levels proposed for off-site are well below current applicable health criteria; and the levels do restore the quality of the groundwater to the extent reasonable given technical and economic constraints. These constraints include the high additional incremental costs for removal of small amounts of additional pollutants and the need to minimize the removal of groundwater to achieve acceptable cleanup levels.

21. Water Supply Wells. Great Oaks Water Supply Company drinking water supply well GO-13 was contaminated with pollutants from the dischargers' release. GO-13 was removed from service in December 1981 and has since been destroyed and sealed. As a result of interim cleanup, groundwater in Great Oaks well GO-4, a drinking water supply well located down-gradient from the site, has remained free of detectable concentrations of volatile organic chemicals. TCA concentrations of up to 5 ppb may reach the B aquifer in the vicinity of GO-4 and lower concentrations may reach the B aquifer in the vicinity of other down-gradient Great Oaks wells after the dischargers have obtained an HI of 0.25 in off-site aquifers and discontinues groundwater extraction. (The DHS drinking water action level for TCA is 200 ppb.)
22. Pumping and recharge activities within the Santa Teresa Groundwater Basin by others affect vertical and lateral hydraulic gradients and may impact plume migration control at the Fairchild site and off-site. Furthermore, the overall imbalance in the hydrologic budget for the Santa Teresa Groundwater Basin is beyond the sole control of the dischargers.
23. The final remediation plan is conceptual and provides a basis for remedial design.
24. Development of this final cleanup plan was based on the Regional Board's evaluation of seven years of water and soil quality data. Samples have been collected and analyzed by the Regional Board to confirm the validity of data generated by the dischargers. Some of the data was reviewed by EPA and found to be acceptable for limited purposes. The quality of this data has been taken into consideration in developing the final cleanup plan.
25. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 16, 1986. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwaters.

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26. The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:
 - a. Industrial process water supply
 - b. Industrial service water supply
 - c. Municipal and domestic water supply
 - d. Agricultural water supply
27. The dischargers have caused or permitted, and threaten to cause or permit, waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance. On-site and off-site final containment and remediation measures need to be implemented to alleviate the threat to the environment posed by the plume of pollutants.
28. This action is an order to enforce the laws and regulations administered by the Regional Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
29. The Regional Board has notified the dischargers and interested agencies and persons of its intent under California Water Code Section 13304 and California Health and Safety Code Section 25356.1(d) to prescribe Site Cleanup Requirements and to issue a remedial action plan for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.
30. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code and Section 25356.1 of the California Health and Safety Code, that the dischargers shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
2. Further significant migration of chemicals above cleanup levels as described in Specification B.3 and B.4 through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of chemicals are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing chemicals shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

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2. The dischargers shall conduct monitoring activities as needed to define and detect changes in the local hydrogeologic conditions and the lateral and vertical extent of soil and groundwater containing chemicals. Should monitoring results show evidence of plume migration above cleanup levels as described in Specification B.3, and, during remedial action, above 0.5 ppb DCE in Zones 2 and 3 as shown in Figure 1 of the Self-Monitoring Plan attached to this Order, additional plume characterization may be required.
3. Final cleanup levels for chemical concentrations in off-site wells containing chemicals from the dischargers' facility shall be equal to or less than an HI of 0.25.

The HI is calculated as shown:

$$\sum_{i=1}^n \frac{\text{concentration of chemical "i"}}{\text{safe drinking water level for chemical "i"}}$$

At the time of this Order, DHS Drinking Water Action Levels are the most stringent safe drinking water criteria for chemicals detected off-site. DHS Action Levels shall be used to calculate the off-site HI unless Maximum Contaminant Levels (MCLs) or other final, duly-promulgated drinking water standards become the most stringent safe drinking water level.

4. Final groundwater cleanup goals in on-site aquifers shall be equal to or less than the DHS drinking water action level or Maximum Contaminant Level, whichever is more stringent, for each of the following chemicals: TCA, DCE, PCE, Freon-113, and xylenes. No action levels or MCLs have been established for acetone or IPA. The final cleanup goal for acetone, based on the oral reference dose in the Integrated Risk Management System (IRIS) is 3500 ppb. The final cleanup goal for IPA, based on the DHS Site Specific Remediation Criterion for IPA as explained in Table 2 of the Groundwater Self-Monitoring Plan attached to this Order, is 2,250 ppb.
5. Final chemical concentrations shall not be found to exceed the appropriate cleanup level based on the moving annual average of analytical results as determined at the end of each quarter.

The moving annual average shall be calculated each quarter for each well using the 4 most recent quarterly sampling results. If the moving annual average for any well in any quarter increases by 50% or more relative percent difference (RPD) from the previous quarter, which will be considered a baseline quarter, then the dischargers shall inform the Regional Board by telephone of such an increase as soon as the dischargers or the dischargers' agent have written laboratory results indicating such an increase. The dischargers shall confirm this notification in writing within two weeks of the telephone notification. As part of the quarterly monitoring report for the quarter in which the concentration increase occurred, the dischargers shall submit to the Regional Board a technical report acceptable to the Executive Officer containing an evaluation of the occurrence and proposal for corrective action. The report shall

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include a proposal for increased monitoring and an evaluation of the costs, benefits and drawbacks of modifying active hydraulic cleanup and containment measures in comparison with a continued monitoring alternative.

The quarter prior to the quarter in which an RPD of 50% or greater was detected shall be established as the baseline quarter. The moving annual average for the baseline quarter shall be established as the baseline average. If the second quarterly average following the baseline quarter is still 50% or more RPD above the baseline average and the dischargers have not implemented a corrective action program, and the concentrations are above final cleanup levels, then a threatened violation is present and the dischargers shall inform the Regional Board of the causes of this threatened violation. If the third quarterly average is an increase of 50% or more RPD from the baseline average and concentrations are above final cleanup levels then the dischargers shall be considered to be in violation of this order and shall inform the Regional Board of how and when the dischargers will regain compliance.

6. The dischargers shall cleanup soil to a goal of 1 ppm for each of the following chemicals: TCA, DCE, xylenes, Freon-113, and PCE. This goal may be modified by the Executive Officer if the dischargers demonstrate with site specific data that higher levels of chemicals in the soil will not threaten the quality of waters of the State or that cleanup to this level is infeasible and human health and the environment are protected.
7. The dischargers shall optimize, with a goal of 100%, their use of the groundwater extracted from their groundwater cleanup activities to aid the cleanup and minimize water level declines. The dischargers shall not be found to be in violation of this Order if documented factors beyond the dischargers' control prevent the dischargers from attaining 100% reuse, provided that the dischargers have made a good faith effort to attain that goal. Factors effecting the dischargers' ability to achieve the reuse goal include but are not limited to: (1) whether the extracted groundwater must be disposed of in accordance with Resource, Conservation, and Recovery Act (RCRA) regulations, and (2) cooperation from local water suppliers in reusing the water.
8. Off-site compliance points shall be established at all monitoring wells which at any time are outside the 0.25 HI plume boundary. After on-site activities except for monitoring are completed, on-site compliance points shall be established at all wells which are or will be within the boundaries of the slurry wall. Notwithstanding this specification, the dischargers may seal monitoring wells outside the 0.25 HI plume boundary upon approval of the Executive Officer.
9. The dischargers shall maintain extraction wells WCC-20, RW-2, RW-22, and RW-25 in operable condition until the cleanup levels are attained throughout the entire plume area.
10. The dischargers shall implement the final cleanup plan described in Findings 12, 13, 14, 15, and 16, as modified by this Order.

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C. PROVISIONS

1. The dischargers shall submit to the Regional Board acceptable monitoring program reports containing results of work performed according to a program prescribed by the Regional Board's Executive Officer.
2. The dischargers shall comply with this Order immediately upon adoption and the dischargers shall further comply with the PROHIBITIONS and SPECIFICATIONS above, in accordance with the following tasks and compliance time schedules:

a. GROUNDWATER CONSERVATION

- 1) COMPLETION DATE: February 10, 1989

TASK 1: FINAL PLAN FOR GROUNDWATER REUSE AND REINJECTION. Submit a technical report acceptable to the Executive Officer describing the groundwater reuse plan associated with the final cleanup plan. The report shall include documentation of efforts to reuse the water, efforts to secure users for the water, reasons why potential users would not accept the water, and justification for why the pumped water cannot be used for beneficial uses (including direct reuse as drinking water) or returned to the Basin as of January 31, 1989. The report shall address reuse under each of the following conditions: (1) regulation of the extracted groundwater under RCRA does not effect reuse efforts, and (2) regulation of the extracted groundwater under RCRA does effect reuse efforts. The report shall also include a proposal for reinjection of groundwater extracted on-site and/or from off-site well RW-25 and plans to study potential clogging of injection wells and potential effects of reinjection on the plume boundaries. An implementation schedule for reinjection and other reuse measures shall be included.

- 2) COMPLETION DATE: May 15, 1989

TASK 2: DOCUMENTATION OF GROUNDWATER REUSE. Submit a technical report acceptable to the Executive Officer documenting the completion of the necessary tasks identified in the technical report submitted for Task 1 except for tasks associated with reinjection of extracted groundwater. This technical report may be submitted as part of the quarterly monitoring report that is due May 15, 1989.

- 3) COMPLETION DATE: May 15, 1990

TASK 3: DOCUMENTATION OF REINJECTION. Submit a technical report acceptable to the Executive Officer documenting the implementation of on-site and/or off-site reinjection as proposed in Task 1, evaluating the

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effect of reinjection on the plume boundaries, and presenting the results from the well clogging study. This technical report may be submitted as part of the quarterly monitoring report that is due May 15, 1990. If reinjection is determined to be infeasible, such determination shall be made by the Regional Board.

b. IN-SITU SOIL AERATION

1) COMPLETION DATE: March 1, 1989

TASK 4: IN-SITU SOIL AERATION SYSTEM INTERIM DESIGN REPORT. Submit a technical report acceptable to the Executive Officer documenting the construction and operation of the in-situ soil aeration system for treating soils with TCA concentrations greater than 10 ppm. The report shall contain soil boring logs, well construction details, results from soil chemical testing, and air monitoring results (laboratory chemical analyses, OVA monitoring, and flow measurements). The report shall also document construction and operation of any necessary additional on-site groundwater extraction well or wells.

2) COMPLETION DATE: August 15, 1989

TASK 5: MODIFICATIONS TO IN-SITU SOIL AERATION SYSTEM. Submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the existing system in removing volatile chemicals from soils containing greater than 1 ppm TCA and proposing any modifications needed to cleanup soils containing greater than 1 ppm TCA. The report may be submitted as part of the quarterly status report that is due August 15, 1989.

3) COMPLETION DATE: November 15, 1989

TASK 6: IN-SITU SOIL AERATION SYSTEM FINAL DESIGN REPORT. Submit a technical report acceptable to the Executive Officer documenting the completion of any modifications to the in-situ soil aeration system identified in Task 5. This technical report may be submitted as part of the quarterly monitoring report due on November 15, 1989.

4) COMPLETION DATE: 45 days prior to expected termination of the in-situ aeration system

TASK 7: PROPOSAL TO TERMINATE OPERATION OF THE IN-SITU SOIL AERATION SYSTEM. Submit a technical report acceptable to the Executive Officer containing a proposal for terminating operation of the in-situ soil aeration system and the criteria used to justify termination of system operation. The proposal shall include cycling of the system to determine if concentrations increase after the system is temporarily shut down and then reac-

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tivated. This report shall also include a proposal indicating the locations of and sampling intervals for soil borings to determine chemical concentrations remaining in the soils.

- 5) COMPLETION DATE: Due date for quarterly status report for the quarter in which operation of the in-situ soil aeration system is terminated.

TASK 8: COMPLETION OF ON-SITE SOILS REMEDIATION. Document in the appropriate quarterly report the completion of the necessary tasks identified in the technical report submitted for Task 7 including the chemical results from samples from the soil borings.

c. DEED RESTRICTION

- 1) COMPLETION DATE: February 15, 1989

TASK 9: PROPOSED DEED RESTRICTION. Submit a technical report acceptable to the Executive Officer containing a draft deed restriction for prohibiting use of on-site groundwaters for drinking water supply and prohibiting activities that could potentially undermine the integrity of slurry wall. The deed restriction shall remain in effect until drinking water action levels are achieved in on-site aquifers. This report may be contained in the monthly status report due February 15, 1989.

- 2) COMPLETION DATE: May 15, 1989

TASK 10: FILING OF THE DEED RESTRICTION. Submit a technical report acceptable to the Executive Officer documenting that the deed restriction has been filed with the Santa Clara County Recorder's Office. This report may be contained in the quarterly status report due May 15, 1989.

d. ADDITIONAL ON-SITE INFORMATION

- 1) COMPLETION DATE: May 15, 1989

TASK 11: PROPOSAL FOR DETERMINING DESORPTION OF CHEMICALS FROM ON-SITE SOILS. Submit a technical report acceptable to the Executive Officer containing a proposal for obtaining site-specific information about the desorption of chemicals from on-site soils to groundwater. This report may be contained in the quarterly status report due May 15, 1989. In lieu of a proposal, the dischargers may submit results from desorption tests already performed. If acceptable to the Executive Officer, these test procedures shall satisfy the requirements of both Task 11 and Task 12.

- 2) COMPLETION DATE: August 15, 1989

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TASK 12: RESULTS OF DESORPTION TESTING. Submit a technical report acceptable to the Executive Officer containing the results from the desorption testing. This report may be submitted as part of the quarterly status report due August 15, 1989.

e. ADDITIONAL OFF-SITE INFORMATION

- 1) COMPLETION DATE: May 1, 1989

TASK 13: PROPOSAL FOR NEW MONITORING WELLS. Submit a technical report acceptable to the Executive Officer containing a proposal for determining the boundaries of the plume in the area bounded by the following streets: Bernal Road, Via del Oro, Great Oaks Boulevard, and Santa Teresa Boulevard.

- 2) COMPLETION DATE: July 3, 1989

TASK 14: DEFINITION OF PLUME BOUNDARIES. Submit a technical report acceptable to the Executive Officer documenting the completion of tasks identified in the technical report submitted for Task 13.

f. CURTAILING OFF-SITE GROUNDWATER EXTRACTION

- 1) COMPLETION DATE: four months prior to proposed implementation of off-site groundwater extraction curtailment

TASK 15: OFF-SITE WELL PUMPING CURTAILMENT CRITERIA AND PROPOSAL. Submit a technical report acceptable to the Executive Officer which contains a proposal for curtailing pumping from off-site groundwater extraction wells and the criteria used to justify such curtailment. The proposal shall include temporary curtailment of extraction well operation for an extended period of time to study the effects on pollutant migration prior to well abandonment. This report should identify the method, specific monitoring wells, and the basis for the time frame to be used to determine that final cleanup levels have been reached and that the potential for increases above cleanup levels in concentrations is minimal. This report shall include supporting data for and an evaluation of water quality in areas believed to be remediated. As the dischargers intend to curtail use of extraction wells in a sequential manner as cleanup levels are achieved, the report shall contain an evaluation of capture zone confirmation for remaining extraction wells and a proposal for installation of additional piezometers and monitoring wells as needed. This report shall also provide for soil borings in the saturated and unsaturated portions of the B aquifer to determine residual soil chemical concentrations. Notwithstanding this provision, the dischargers may begin

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curtailing the pumping of extraction wells RW-19(B) and RW-27(B), in accordance with the proposal contained in the RAP submitted October 1988, without submitting a technical report.

- 2) COMPLETION DATE: 30 days after Regional Board approves off-site curtailment

TASK 16: OFF-SITE CURTAILMENT IMPLEMENTATION. Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 15.

g. CURTAILING ON-SITE GROUNDWATER EXTRACTION

- 1) COMPLETION DATE: two months prior to proposed implementation of on-site groundwater extraction curtailment

TASK 17: ON-SITE WELL PUMPING CURTAILMENT CRITERIA AND PROPOSAL. Submit a technical report acceptable to the Executive Officer containing a proposal for curtailing pumping from on-site groundwater extraction wells and the criteria used to justify such curtailment. This report shall identify the method and the basis for the time frame to be used to determine that final cleanup levels have been reached and that the potential for increases above cleanup levels in concentrations is minimal. The report shall contain an evaluation of the feasibility of reducing on-site groundwater concentrations to equal to or less than the cleanup levels listed in Table 2 of the groundwater self-monitoring plan. The report shall also propose a revised analysis based on actual final soil and groundwater concentrations for estimating future chemical migration through the slurry wall and through the on-site AB aquitard.

If the dischargers determine that it is not feasible to achieve these cleanup levels, the report shall evaluate the maximum reductions in on-site groundwater concentrations that can be achieved. Additionally, the report shall contain a proposal for insuring the long-term integrity of the slurry wall, specifically addressing the potential loss of fines if the hydraulic gradient across the slurry wall becomes excessive.

- 2) COMPLETION DATE: 30 days after Regional Board approves on-site curtailment.

TASK 18: ON-SITE CURTAILMENT IMPLEMENTATION. Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 17.

- h. 1) COMPLETION DATE: January 18, 1994

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TASK 19: FIVE YEAR STATUS REPORT AND EFFECTIVENESS EVALUATION. Submit a technical report acceptable to the Executive Officer containing the results of any additional investigation including the biodegradation study; an evaluation of the effectiveness of installed final cleanup measures and cleanup costs; additional recommended measures to achieve final cleanup objectives, if necessary; a comparison of previous expected costs with the costs incurred and projected costs necessary to achieve cleanup levels and goals; and the tasks and time schedule necessary to implement any additional final cleanup measures. This report shall also describe the reuse of extracted groundwater, evaluate and document the cleanup of polluted groundwater, and evaluate and document the removal and/or cleanup of polluted soils. If safe drinking water levels have not been achieved on-site and are not expected to be achieved on-site through continued groundwater extraction and/or in-situ soil aeration, this report shall also contain a proposal for groundwater flushing within the slurry wall to achieve safe drinking water levels and an evaluation addressing whether it is technically feasible to achieve drinking water quality on-site.

- i. 1) COMPLETION DATE: two months after request made by the Executive Officer

TASK 20: EVALUATION OF NEW HEALTH CRITERIA. Submit a technical report acceptable to the Executive Officer which contains an evaluation of how the final plan and cleanup levels would be affected, if the concentrations, as listed in Specification B.3 and B.4, Table 1 and 2 of the groundwater self-monitoring plan and used to calculate Hazard Index numbers, change as a result of changes in source document conclusions or promulgation of drinking water standards or action levels.

- j. 1) COMPLETION DATE: two months after request by Executive Officer

TASK 21: EVALUATION OF NEW TECHNICAL INFORMATION. Submit a technical report acceptable to the Executive Officer which contains an evaluation of new technical and economic information which indicate that cleanup levels in some plume areas may be considered for revision. Such technical reports shall not be required unless the Executive Officer or Regional Board determines that such new information indicates a reasonable possibility that the Order may need to be changed under the criteria described in Finding 17.

- 3. The submittal of technical reports evaluating additional final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. If any additional remedial investigations or feasibility studies are found to be necessary, they shall

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be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), Section 25356.1 (c) of the California Health and Safety Code, CERCLA guidance documents, the State Board's Resolution No. 68-16, and this Order.

4. If the dischargers are delayed, interrupted or prevented from complying with this Order or meeting one or more of the time schedules in this Order, the dischargers shall promptly notify the Executive Officer. In the event of such delays or noncompliance, the Regional Board will consider modification of the time schedules established in this Order.
5. Monthly technical status letter reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted by the fifteenth of each month to the Regional Board commencing February 15, 1989 and covering the previous month. On a monthly basis thereafter, or as required by the Executive Officer, these reports shall consist of a report that: (1) summarizes work completed since submittal of the previous report, and work projected to be completed by the time of the next report, (2) identifies any obstacles of which the dischargers are aware that may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) includes, in the event of non-compliance with any Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order.

These reports shall also briefly identify any problems with or changes in the groundwater extraction system, the groundwater treatment systems, the in-situ soil aeration system (including changes in the use of air inlet and/or air extraction wells), groundwater reuse and/or reinjection systems, the integrity of the slurry wall if the hydraulic gradient across the slurry wall exceeds 24 feet, and the biodegradation study.

If the dischargers propose to inject air into the air inlet wells, the dischargers shall first include a proposal for injecting air into the air inlet and/or air extraction wells in the monthly report. This proposal shall include techniques for monitoring and controlling the potential spread of pollutants due to the injection of air. The dischargers shall not inject air into the air inlet or air extraction wells until approved by the Executive Officer. The results of any air injection shall be reported in subsequent monthly reports.

6. Every three months beginning on May 15, 1989, (subsequent due dates being August 15, November 15, February 15 and May 15 of each year) or as required by the Executive Officer, the dischargers shall submit a quarterly report on the progress of the remedial program during the previous calendar-year quarter. Quarterly reports shall include, but need not be limited to, updated water table and piezometric surface maps for all affected water bearing zones, and appropriately

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scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures. Cross-sectional geological maps describing the hydrogeological setting of the site shall be provided in the first quarterly status report for each calendar year that this Order is in effect. If five or more new soil borings or wells are completed during any quarter, updated cross-sectional geological maps shall be provided in the quarterly report for that quarter. Quarterly reports shall also contain a summary of in-situ air extraction monitoring and sampling data and other information as described in the Groundwater Self-Monitoring Plan.

7. On an annual basis beginning on February 15, 1990, or as required by the Executive Officer, the dischargers' February 15 progress reports shall include, but need not be limited to, an evaluation of the progress of cleanup measures and the feasibility of meeting on-site and off-site groundwater cleanup levels and on-site soil cleanup goals established in this Order. If the dischargers determine that it is not feasible to meet the cleanup levels or goals established by this Order, the report shall also contain a evaluation of maximum cleanup levels that could be achieved.

If the dischargers determine that it is not feasible to meet on-site soil cleanup goals, the report shall evaluate the potential for chemicals in on-site soils to threaten the quality of the waters of the State and shall evaluate whether public health and the environment are protected.

The report shall also include interim results from the biodegradation study.

8. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer.
9. All samples shall be analyzed by laboratories certified to perform analysis on Hazardous Materials or laboratories using approved EPA methods or an equivalent method acceptable to the Executive Officer. The dischargers shall request laboratories to follow EPA guidance "Documentation Requirements for Data Validation of Non-CLP Laboratory Data for Organic and Inorganic Analyses" dated May 1988 for preparation of data validation packages when required by the Executive Officer. The dischargers shall request the laboratories to maintain quality assurance/quality control records for Regional Board review for 6 years and will inform the Regional Board of each laboratory's response.
10. The dischargers shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
11. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:
 - a. Santa Clara Valley Water District

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- b. Santa Clara County Health Department
- c. City of San Jose
- d. State Department of Health Services/Toxic Substances Control Division
- e. State Department of Health Services/Drinking Water Supply Division
- f. U. S. Environmental Protection Agency, Region IX


Copies of all reports pertaining to compliance with Tasks under Provision 2 shall be provided to the Santa Teresa Public Library.

Additional copies of correspondence, reports and documents pertaining to annual reporting of compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided for public use when requested by the Executive Officer.

- 12. The dischargers shall permit the Regional Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
 - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the terms and conditions of this Order.
 - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.
- 13. The dischargers shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.
- 14. If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state, the dischargers shall immediately report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-office hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention and Containment Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons notified.
- 15. The Regional Board will review this Order periodically and may revise the requirements when necessary under the criteria in Finding 17.
- 16. Regional Board Order Nos. 87-16 and 88-46 are hereby rescinded.

SITE CLEANUP REQUIREMENTS - FAIRCHILD-SAN JOSE FINAL CLEANUP

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on January 18, 1989.



Steven R. Ritchie
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SCHLUMBERGER TECHNOLOGY CORPORATION AND
FAIRCHILD SEMICONDUCTOR CORPORATION - SAN JOSE SITE
GROUNDWATER SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a waste discharger's monitoring program, also referred to as a self-monitoring program, are: (1) To document compliance with site cleanup requirements and prohibitions established by this Regional Board, (2) To facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) To develop or assist in the development of effluent or other limitations, discharger prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) To prepare water and wastewater quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations or Potential Violations of Requirements

- a. The dischargers shall file a written technical report at least 15 days prior to advertising for bid on any construction project which may potentially adversely effect the dischargers' soil and groundwater cleanup activities or the performance of the slurry wall. All projects involving subsurface construction shall be reported.
- b. In the event the dischargers are unable to comply with the conditions of the site cleanup requirements and prohibitions due to:
 - (1) maintenance work, power failures, or breakdown of waste treatment equipment, or
 - (2) accidents caused by human error or negligence, or
 - (3) other causes such as acts of nature, or
 - (4) poor operation or inadequate system design,

the waste dischargers shall promptly accelerate the pertinent portions of the monitoring program to weekly or as required by the Regional Board's Executive Officer for those constituents which have been violated. Such analysis shall continue until such time as the

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dischargers are back in compliance with the conditions and prohibitions of the site cleanup requirements, or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

2. Bypass Reports

Bypass reporting shall be an integral part of the regular monitoring program report. A report on bypassing of treatment units shall be made which will include cause, time and date, duration and estimated volume bypassed, method used in estimating volume, and persons and agencies notified. Notification to the Regional Board shall be made immediately by telephone (415-464-1255), followed by a written account within 15 days.

3. Self-Monitoring Reports

a. Reporting Period:

Written reports shall be filed regularly each quarter within forty-five days from the end of the quarter monitored. The first quarterly report is due February 15, 1989.

b. Letter of Transmittal:

A letter transmitting self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violation. If the dischargers have previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by either a principal executive officer or his duly authorized employee. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

c. Data Results:

- (1) Results, Hazard Indices, moving annual averages from each required analysis and observation shall be submitted in the quarterly self-monitoring regular reports. Results shall also be submitted for any additional analyses performed by the dischargers at the specific request of the Board. Monthly water level data shall also be submitted in the quarterly report.
- (2) Quarterly reports shall contain data on the status of construction and operation of the in-situ soil aeration system, including, as appropriate, soil boring logs, well construction details, results from soil chemical testing, air monitoring results (laboratory chemical analyses, OVA monitoring, and flow measurements), and an evaluation of the effectiveness of the system in removing volatile chemicals from soils continuing greater than 1 ppm TCA.

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- (3) The quarterly report shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.
- (4) The quarterly report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Executive Officer. Any special methods shall be identified and shall have prior approval of the Board's Executive Officer.
- (5) Original lab results shall be retained and shall be made available for inspection for six years after origination or until after all continuing or impending legal or administrative actions are resolved.
- (6) A map shall accompany the quarterly report, showing sampling locations, Hazard Index contours, and TCA plume contours.
- (7) The dischargers shall describe in the quarterly monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness, water surface elevations for each well used to determine water surface elevation contours and water quality data.
- (8) The annual report shall be combined with the quarterly report submitted on February 15 of each year and shall include cumulative data for the current year for each parameter of the attached Tables 1 and 2. The annual report shall also include average Hazard Indices and minimum, maximum, median and average water quality data for the year. Water level data and GC/MS results shall be included in the annual report. The annual report shall also include Hazard Index contour maps and contour maps for each chemical present above detectable concentrations.

d. Self-Monitoring Program (SMP) Revisions:

Additional long term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be based on the following criteria and shall be proposed in a quarterly report. The changes shall be implemented no earlier than 45 days after a self-monitoring report is submitted for review or not at all if the proposal is found to be unacceptable by the Executive Officer.

Criteria for SMP revisions:

- (1) Discontinued analysis for a routine chemical parameter for a specific well after a one-year period of below detection limit values for that parameter.

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- (2) Changes in sampling frequency for a specific well after a one-year period of below detection limit values for all chemical parameters from that well.
- (3) Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other cleanup strategies).
- (4) Add routine analysis for a chemical parameter if the parameter appears as an additional chromatographic peak in three consecutive samples from a particular well.
- (5) Add routine chemical parameters for new wells based on the results of initial GC/MS analysis.
- (6) Alter sampling frequency based on evaluation of collective data base.

D. DESCRIPTION OF SAMPLING STATIONS

Groundwater:

<u>Stations</u>	<u>Description</u>
Listed in TABLES 3,4, and 5, and shown in FIGURE 1	Monitoring, observation, extraction, and water supply wells.

E. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be as given in Tables 3,4, and 5.

In addition, if a previously undetected compound or peak is detected in a sample from a well, a second sample shall be taken within a week after the results from the first sample are available. All chromatographic peaks detected in two consecutive samples for purgeable halocarbons and/or volatile organics shall be identified and quantified in the quarterly report.

A GC/MS analysis shall be performed annually and all peaks identified and reported for the following wells:

- all operating extraction wells
- all slurry wall monitoring well pairs on the down-gradient portion of the slurry wall (wells 116, 126, 127, WCC-2, WCC-30, 128, 129, 130, 125, WCC-38)
- wells RW-19, 72, 78, 84, WCC-17, WCC-20.

A GC/MS analysis shall be performed on each new well within two months after installation and well development and all peaks identified and reported on each well in the next quarterly report.

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Groundwater elevations shall be obtained on a monthly basis from each monitoring, observation, extraction, and water supply well listed in Tables 3,4,or 5. Groundwater elevations shall also be obtained on a monthly basis from wells 124(B) and WCC-31(B).

Well depths shall be determined on an annual basis and compared to the depth of the well as constructed.

The depth of the pump and the groundwater elevation at the time of sampling shall be determined and submitted in the quarterly report with the sampling results.

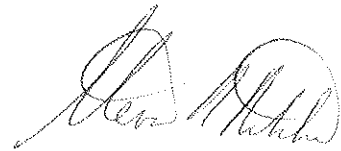
I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data to determine compliance with Regional Board Order No. 89-16.
2. Is effective on the date shown below.
3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the dischargers and revisions will be ordered by the Executive Officer.

Effective Date:

1/8/89

Attachments: Tables 1,2,3,4,5
Figure 1



Steven R. Ritchie
Executive Officer

GROUNDWATER SELF-MONITORING PLAN - FAIRCHILD-SAN JOSE

TABLE 1

OFF-SITE GROUNDWATER CLEANUP LEVELS

<u>Chemical</u>	<u>DHS Drinking Water Action Level (ppb)</u>	<u>Final Off-site Cleanup Concentration (ppb)</u> ¹
TCA	200	50
DCE	6	1.5

¹ Final cleanup levels in this table are based on DHS drinking water action levels as established at the adoption of this Order. If DHS action levels change or MCLs become more stringent than action levels, final cleanup levels may need to be revised. Values indicated in the table are the concentrations that would achieve an HI of 0.25 if only 1 compound is present. When both TCA and DCE are present, concentrations to meet an HI of 0.25 shall be lower.

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TABLE 2

ON-SITE GROUNDWATER CLEANUP GOALS

<u>Chemical</u>	<u>Final On-site Cleanup Concentration (ppb)¹</u>
TCA	200
DCE	6
Freon-113	18,000
PCE	4 ²
Xylenes	620 ³
Acetone	3,500 ⁴
IPA	2,250 ⁵

¹ Except as noted, on-site groundwater cleanup levels are listed at DHS drinking water action levels as of the adoption of the Order. If DHS drinking water action levels change, on-site groundwater cleanup levels will change accordingly. If the Maximum Contaminant Level (MCL) for any chemical becomes more stringent than the DHS drinking water action level, then the MCL shall be the cleanup level for that chemical.

² PCE is the one on-site chemical that is a potential carcinogen.

³ This value is for a single isomer or the sum of the three isomers.

⁴ The value for acetone is established based on the oral reference dose (Rfd) in the Integrated Risk Management Information System (IRIS).

⁵ This value is based on the DHS Site Specific Remediation Criterion for IPA, 2,250 ppb.

Table 3

OFF-SITE "C" AQUIFER MONITORING SCHEDULE

Well Number	Year 1 Monitoring Frequency (1)					30-Year Monitoring Frequency			
	Phase 1 (8 Weeks)	Phase 2 (8 Weeks)	Phase 3 (8 Weeks) and Weeks 25 through 36		Weeks 37 through 48	Years 2 Through 6	Years 7 Through 16	Years 17 Through 31	
79(C)	Weekly	Twice Monthly	Monthly	Quarterly	Quarterly	Semi-Annually	Annually	ETV	
80(C)	Weekly	Twice Monthly	Monthly	Quarterly	Quarterly	--	--	--	
102(C)	Monthly	Twice Monthly	Weekly	Monthly	Monthly	Semi-Annually	Annually	ETV	
107(C)	Monthly	Twice Monthly	Weekly	Monthly	Monthly	--	--	--	
109(C)	--	--	--	Semi-Annually	Semi-Annually	--	--	--	
110(C)	--	--	--	Semi-Annually	Semi-Annually	--	--	--	
111(C)	--	--	--	Semi-Annually	Semi-Annually	--	--	--	
RW-3(C)	Weekly	Twice Monthly	Monthly	Monthly	Monthly	--	--	--	
RW-4(C)	Twice Monthly	Monthly	Monthly	Quarterly	Quarterly	--	--	--	
RW-5(C)	Weekly	Weekly	Weekly	Monthly	Monthly	--	--	--	
RW-6(C)	Monthly	Monthly	--	Quarterly	Quarterly	--	--	--	
RW-7(C)	Monthly	Weekly	Weekly	Monthly	Monthly	--	--	--	
RW-9(C)	Weekly	Weekly	Weekly	Monthly	Monthly	Semi-Annually	--	--	
RW-10(C)	Monthly	Twice Monthly	Weekly	Monthly	Monthly	--	--	--	
RW-18(C)	--	--	--	Semi-Annually	Semi-Annually	--	--	--	
RW-21(C)	Monthly	Monthly	Weekly	Semi-Annually	Semi-Annually	Semi-Annually	--	--	
RW-26(C)	Monthly	--	--	Semi-Annually	Semi-Annually	--	--	--	
WCC-6(C)	--	--	--	Quarterly	Quarterly	--	--	--	
WCC-18(C)	Weekly	Twice Monthly	Weekly	Quarterly	Quarterly	Semi-Annually	Annually	ETV	
WCC-23(C)	Weekly	Monthly	Monthly	Quarterly	Quarterly	Semi-Annually	Annually	ETV	
WCC-28(C)	Monthly	--	--	Semi-Annually	Semi-Annually	--	--	--	
WCC-32(C)	Monthly	Twice Monthly	Weekly	Quarterly	Quarterly	--	--	--	
WCC-34(C)	--	--	--	--	--	--	--	--	
WCC-35(C)	--	--	--	Semi-Annually	Semi-Annually	--	--	--	

(1) Implemented beginning May 2, 1988.

ETV - Denotes Every Two Years

Table 4

OFF-SITE ALTERNATIVE 2, CASE 2 (HI = 0.25)
"B" AQUIFER MONITORING SCHEDULE

Well Number	Year 1 Monitoring Frequency (1)			Year 2 Monitoring Frequency (2)			Year 3 Monitoring Frequency (3)			Year 4 Monitoring Frequency (4)			Year 5 Monitoring Frequency (5)			Year 6 Monitoring Frequency (6)			Year 7 Monitoring Frequency (7)			Year 8 Monitoring Frequency (8)			Year 9 Monitoring Frequency (9)			Year 10 Monitoring Frequency (10)			Year 11 Monitoring Frequency (11)			Year 12 Monitoring Frequency (12)			Year 13 Monitoring Frequency (13)			Year 14 Monitoring Frequency (14)			Year 15 Monitoring Frequency (15)			Year 16 Monitoring Frequency (16)			Year 17 Monitoring Frequency (17)			Year 18 Monitoring Frequency (18)			Year 19 Monitoring Frequency (19)			Year 20 Monitoring Frequency (20)			Year 21 Monitoring Frequency (21)			Year 22 Monitoring Frequency (22)			Year 23 Monitoring Frequency (23)			Year 24 Monitoring Frequency (24)			Year 25 Monitoring Frequency (25)			Year 26 Monitoring Frequency (26)			Year 27 Monitoring Frequency (27)			Year 28 Monitoring Frequency (28)			Year 29 Monitoring Frequency (29)			Year 30 Monitoring Frequency (30)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2			Phase 1			Phase 2</		

OFF-SITE ALTERNATIVE 2, CASE 2 (HI = 0.25)
"B" AQUIFER MONITORING SCHEDULE

- (1) Implemented immediately.
- (2) Implemented after two years of remediation in Zone 2.
- (3) Implemented after five years of remediation in Zone 3.
- (4) Implemented after remediation in all zones is completed.
- (5) Unless otherwise noted, slurry wall wells will be sampled according to the on-site monitoring plan.

A - denotes Annually
S-A - denotes Semi-Annually
M - denotes Monthly
TM - denotes Twice Monthly
Wkly - denotes Weekly
Qtr - denotes Quarterly
TW - denotes Twice Weekly
ETY - denotes Every Two Years

GROUNDWATER SELF-MONITORING PLAN - FAIRCHILD-SAN JOSE

TABLE 5

ON-SITE MONITORING SCHEDULE

WELL NUMBER	YEAR <u>1</u>	YEAR <u>2</u>	YEARS <u>3-6</u>	YEARS <u>7-16</u>	YEARS <u>17-31</u>
WCC-2(B)	M	Q	S	----	----
WCC-6(C)	Q	S	A	A	ETY
WCC-17B	M	Q	S	----	----
WCC-20B	M	Q	S	A	ETY
WCC-42B	M	Q	S	----	----
119(B)	M	Q	S	----	----
120(B)	M	Q	S	----	----
122(B)	M	Q	S	----	----
127(B)	M	Q	S	A	ETY
AE-1(B)	M	----	----	----	----
AE-2(B)	M	----	----	----	----
AE-3(B)	M	----	----	----	----
AE-4(B)	M	----	----	----	----
RW-23(A)	Q	S	A	A	ETY
WCC-38B	Q	S	A	----	----
125(B)	Q	S	A	----	----
128(B)	Q	Q	S	A	ETY
WCC-30B	Q	Q	S	A	ETY
126(B)	Q	S	A	ETY	----
116(B)	Q	Q	S	A	ETY
129(B)	Q	S	A	ETY	----
130(B)	Q	S	A	----	----

LEGEND

A - DENOTES ANNUALLY
 ETY - DENOTES EVERY TWO YEARS
 S - DENOTES SEMI-ANNUALLY
 M - DENOTES MONTHLY
 Q - DENOTES QUARTERLY

